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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/698,321

10/31/2003

Jos van den Bogerd

143766-1

9819

23413

7590

10/14/2005

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EXAMINER

BISSETT, MELANIE D

ART UNIT

PAPER NUMBER

1711

DATE MAILED: 10/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/698,321

Applicant(s)

BOGERD ET AL.

Examiner

Melanie D. Bissett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/05:7/05.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. The rejections based on 35 USC 103 have been maintained.

***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 3-23, 27-31, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Adachi et al.
4. From a prior Office action:

Döbler discloses a heat-absorbing system comprising a first layer containing an ultraviolet absorber, a second layer containing an infrared absorber and an ultraviolet absorber, and a third layer (abstract). Where the core layer acts as a substrate, the core layer has a thickness of 1-30 mm [0037]. Infrared absorbing additives are included in the core layer in amounts of 0.001-10 g/m<sup>2</sup>, preferably 0.1-1 g/m<sup>2</sup> in preferred concentrations of 20-400 ppm [0047-0048]. Ultraviolet absorbers include benzotriazoles, triazines, and benzophenones [0049] and are used in amounts of 1-10% by weight in the cap layer [0052]. The layers include thermoplastic polymers, including polycarbonates and polyesters [0055]. Bisphenol A polycarbonates are exemplified. Heat stabilizers may be added, including hindered phenols, phosphates, and phosphines [0088]. The layers are coextruded, laminated, and thermoformed ([0091-0092]; examples).

Regarding the properties of the sheet, the reference teaches that the sheets transmit more than 70% in the visible light region [0014]. Also, because the reference teaches the claimed coextruded sheets having the claimed amount of UV absorber in the outer layer and the claimed amount of IR absorber in the core layer, it is the examiner's position that the sheets of Döbler's invention would inherently possess the claimed infrared absorption and UV absorption.

Regarding claims 13-16, it is noted that the claims only limit "the polyester". When read into claim [12] (which has antecedent basis for such a limitation), the Markush group still contains other polymers, where "the polyester" is further limited. Thus, when polycarbonates are chosen for the sheets of the reference, the further limitation of "the polyester" provides no patentable weight, and the claims are anticipated.

Döbler applies as above, teaching the inclusion of heat stabilizers but not specifically noting the preferred amounts of added heat stabilizers. However, the reference does indicate that additives should preferably added in amounts of 0.01-1% by weight [0087]. It is the examiner's position that it would have been prima facie obvious to include the heat stabilizers in the core layer in any amount necessary to optimize the heat stabilization of the layers.

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Döbler applies as above, teaching the use of organic infrared absorbers but failing to teach the use of the claimed boride IR absorbers. Adachi teaches coating solutions for forming films, where synthetic resin binders may be included and fine particles of IR absorbers are used (abstract). Lanthanum boride is listed as a preferred compound, where the fine particles cut off light in the infrared range but transmit light in the visible range (col. 2 lines 59-65). The particles have sizes of less than 100 nm, since larger particles do not disperse as well and cause hazing (col. 3 lines 16-30). The lanthanum boride particles provide a purplish red film (col. 3 lines 1-5). The particles of the invention disperse well in solvents and resins, providing improved visible light transmission without dissolving the particles. Since Döbler expresses concern about the solubility of the organic IR absorbers, it is the examiner's position that it would have been prima facie obvious to use the boride particles of Adachi's invention to provide IR absorption to the layers while also providing improved visible light transmission and desired coloration. Such materials would not need to be dissolved in the resin but would form suitable films by dispersion of the particles.

5. Claims 2, 24-25, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Adachi as applied above, and further in view of La Cellophane.

6. From a prior Office action:

Döbler [and Adachi apply] as above, teaching multilayer structures for multiple applications, including greenhouses [0098], but failing to specify the inclusion of UV absorbers both of the layers surrounding the core layer (B). Döbler shows several layer structures, where thermoplastic layers (S) or (C) would be in contact with layer (B) on the side opposite layer (A) [0024; 0035]. UV absorbers are included in layers (A) and (B) but not necessarily in layers (S) or (C). La Cellophane teaches multilayer thermoplastic structures for greenhouses, where a lowermost layer comprises UV absorbers to prevent aging and subsequent layers are opaque to infrared radiation (p. 1 lines 54-65). The UV absorbers in subsequent layers also serves to prevent aging of the lowermost layer. Examples show that multiple subsequent layers should also include UV absorbers. From this teaching, it is the examiner's position that it would have been prima facie obvious to include UV absorbers in both the lowermost and subsequent layers of Döbler's invention to prevent aging and weathering of all the layers.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Adachi et al. as applied above, and further in view of Burkhardt et al.

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## 8. From a prior Office action:

Döbler applies as above, teaching that the films may be coextruded but failing to mention the use of two- or three-roll mills. Burkhardt teaches that conventional film extrusion practices include three-roll mills to calibrate and cool the film (Figure 25), while coextrusion practices include similar machinery, where the streams are individually shaped prior to being combined ("Coextrusion", 1.4.3). It is the examiner's position that it would have been prima facie obvious to use roll mills in Döbler's coextrusion line to combine, calibrate, and cool the films.

## 9. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Adachi et al. and further in view of MacGregor et al.

## 10. From a prior Office action:

Döbler [and Adachi et al. apply] as above, teaching that polycarbonates or polyesters may be used in the invention but failing to teach the use of cycloaliphatic polyesters or polyarylates. MacGregor teaches multilayer plastic composite sheets comprising a thermoplastic substrate and at least one surface layer of cycloaliphatic polyester (abstract). Cycloaliphatic polyesters have improved weatherability, chemical resistance, and water absorption properties (col. 2 lines 62-65), and PCCD (fitting the applicant's formula (X)) is the most preferred polyester (col. 4 line 46-col. 5 line 13). It is the examiner's position that it would have been prima facie obvious to use PCCD layers [the Döbler and Adachi] invention to provide films of improved weatherability, chemical resistance, and low water absorption.

Regarding claims 15-16, it is noted that these claims only further limit the polyarylate species of claim 13. When read into claim 13, the Markush group still contains cycloaliphatic polyesters alone. Since this combination suggests such cycloaliphatic polyesters alone, it is the examiner's position that claims 13-16 are obvious over the combination.

## 11. Claims 1, 3-23, 27-31, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Fujita et al. Fujita et al. (US 2004/0028920) can be found on the applicant's form PTO-1449.

## 12. Döbler discloses a heat-absorbing system comprising a first layer containing an ultraviolet absorber, a second layer containing an infrared absorber and an ultraviolet absorber, and a third layer (abstract). Where the core layer acts as a substrate, the

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core layer has a thickness of 1-30 mm [0037]. Infrared absorbing additives are included in the core layer in amounts of 0.001-10 g/m<sup>2</sup>, preferably 0.1-1 g/m<sup>2</sup> in preferred concentrations of 20-400 ppm [0047-0048]. Ultraviolet absorbers include benzotriazoles, triazines, and benzophenones [0049] and are used in amounts of 1-10% by weight in the cap layer [0052]. The layers include thermoplastic polymers, including polycarbonates and polyesters [0055]. Bisphenol A polycarbonates are exemplified. Heat stabilizers may be added, including hindered phenols, phosphates, and phosphines [0088]. The layers are coextruded, laminated, and thermoformed ([0091-0092]; examples).

13. Regarding the properties of the sheet, the reference teaches that the sheets transmit more than 70% in the visible light region [0014]. Also, because the reference teaches the claimed coextruded sheets having the claimed amount of UV absorber in the outer layer and the claimed amount of IR absorber in the core layer, it is the examiner's position that the sheets of Döbler's invention would inherently possess the claimed infrared absorption and UV absorption.

14. Regarding claims 13-16, it is noted that the claims only limit "the polyester". When read into claim [12] (which has antecedent basis for such a limitation), the Markush group still contains other polymers, where "the polyester" is further limited. Thus, when polycarbonates are chosen for the sheets of the reference, the further limitation of "the polyester" provides no patentable weight, and the claims are anticipated.

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15. Dobler applies as above, teaching the inclusion of heat stabilizers but not specifically noting the preferred amounts of added heat stabilizers. However, the reference does indicate that additives should preferably be added in amounts of 0.01-1% by weight [0087]. It is the examiner's position that it would have been prima facie obvious to include the heat stabilizers in the core layer in any amount necessary to optimize the heat stabilization of the layers.

16. Döbler applies as above, teaching the use of organic infrared absorbers but failing to teach the use of the claimed boride IR absorbers. Fujita teaches thermoplastics having hexaboride additives, where the hexaboride provides heat radiation shielding having a high visible heat transmission power without the use of expensive film forming methods (abstract). Lanthanum boride is listed as a preferred compound, where the fine particles cut off light in the infrared range but transmit light in the visible range (examples; [0026]). The particles have sizes of less than 200 nm, since larger particles cause hazing [0027]. It is the examiner's position that it would have been prima facie obvious to use the boride particles of Fujita's invention to provide IR absorption to the layers while also providing improved visible light transmission and heat shielding properties.

17. Claims 2, 24-25, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Fujita et al. as applied above, and further in view of La Cellophane.

18. Döbler and Fujita apply as above, teaching multilayer structures for multiple applications, including greenhouses [0098], but failing to specify the inclusion of UV absorbers both of the layers surrounding the core layer (B). Döbler shows several layer structures, where thermoplastic layers (S) or (C) would be in contact with layer (B) on the side opposite layer (A) [0024; 0035]. UV absorbers are included in layers (A) and (B) but not necessarily in layers (S) or (C). La Cellophane teaches multilayer thermoplastic structures for greenhouses, where a lowermost layer comprises UV absorbers to prevent aging and subsequent layers are opaque to infrared radiation (p. 1 lines 54-65). The UV absorbers in subsequent layers also serves to prevent aging of the lowermost layer. Examples show that multiple subsequent layers should also include UV absorbers. From this teaching, it is the examiner's position that it would have been prima facie obvious to include UV absorbers in both the lowermost and subsequent layers of Döbler's invention to prevent aging and weathering of all the layers.

19. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Fujita et al. as applied above, and further in view of Burkhardt et al.

20. Döbler and Fujita apply as above, teaching that the films may be coextruded but failing to mention the use of two- or three-roll mills. Burkhardt teaches that conventional film extrusion practices include three-roll mills to calibrate and cool the film (Figure 25), while coextrusion practices include similar machinery, where the streams are individually shaped prior to being combined ("Coextrusion", 1.4.3). It is the examiner's



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position that it would have been prima facie obvious to use roll mills in Döbler's coextrusion line to combine, calibrate, and cool the films.

21. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Döbler in view of Adachi et al. and further in view of MacGregor et al.

22. Döbler and Fujita apply as above, teaching that polycarbonates or polyesters may be used in the invention but failing to teach the use of cycloaliphatic polyesters or polyarylates. MacGregor teaches multilayer plastic composite sheets comprising a thermoplastic substrate and at least one surface layer of cycloaliphatic polyester (abstract). Cycloaliphatic polyesters have improved weatherability, chemical resistance, and water absorption properties (col. 2 lines 62-65), and PCCD (fitting the applicant's formula (X)) is the most preferred polyester (col. 4 line 46-col. 5 line 13). It is the examiner's position that it would have been prima facie obvious to use PCCD layers [the Döbler and Adachi] invention to provide films of improved weatherability, chemical resistance, and low water absorption.

23. Regarding claims 15-16, it is noted that these claims only further limit the polyarylate species of claim 13. When read into claim 13, the Markush group still contains cycloaliphatic polyesters alone. Since this combination suggests such cycloaliphatic polyesters alone, it is the examiner's position that claims 13-16 are obvious over the combination.

### ***Double Patenting***

24. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

25. Claims 1-34 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 and 24-39 of copending Application No. 11/124223. Although the conflicting claims are not identical, they are not patentably distinct from each other because of substantially overlapping subject matter. The copending claims are drawn to multilayered sheets having core layers and cap layers, where metal oxide IR absorbing additives are included in the core layers. However, copending claim 5 still suggests the use of boride additives in the core layer. Thus, the copending claims overlap with the present claims where the boride additive is used. The additional copending claims teach the limitations of present claims 2-34.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Response to Arguments***

26. In response to applicant's argument that the Adachi reference teaches a thermosetting resin and thus the combination of references would not result in the claimed invention, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

27. The Adachi reference serves as a secondary reference for teaching the conventionality and benefits of using boride IR absorbers in polymeric coatings and materials. The primary reference, Döbler, teaches thermoplastic layers containing IR absorbers. By Adachi's teaching, the preferred boride compounds are useful for forming improved visible light transmission and desired coloration. One of ordinary skill in the art would expect these benefits to be inherent to the IR absorber, regardless of whether the binder resin is a thermoset or a thermoplastic. It is the examiner's position that it would have been prima facie obvious to include the boride IR absorbers of Adachi's invention in the layers of Döbler's invention for their known benefits. The resulting combination would be the coextruded thermoplastic multilayer article of Döbler's invention having a boride IR absorber in the core layer for improving light transmission and desired coloration. In other words, one of ordinary skill in the art would be motivated to choose an IR additive to be combined with a thermoplastic resin

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with the expectancy of forming improved light transmission and desired coloration based on the teachings of the Adachi reference. The applicant has provided no evidence that the beneficial light transmission and color properties are resultant of a reactive thermosetting solution or that one skilled in the art would not know how to disperse the additive in a coextruding thermoplastic resin. One would expect these properties to be resultant of the IR additive itself and would expect an additive to be dispersible in a molten polymer by mixing.

28. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

29. Regarding the applicant's arguments that the La Cellophane and Burkhardt references teach away from solution coating of the Adachi reference, the mere preference for a coating method does not teach away from layers made from other coating methods. The references were used to teach components that one skilled in the art would have recognized as combinable with the *primary* reference, Döbler.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie D. Bissett whose telephone number is (571) 272-1068. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Melanie D. Bissett  
Patent Examiner  
Art Unit 1711

mdb